

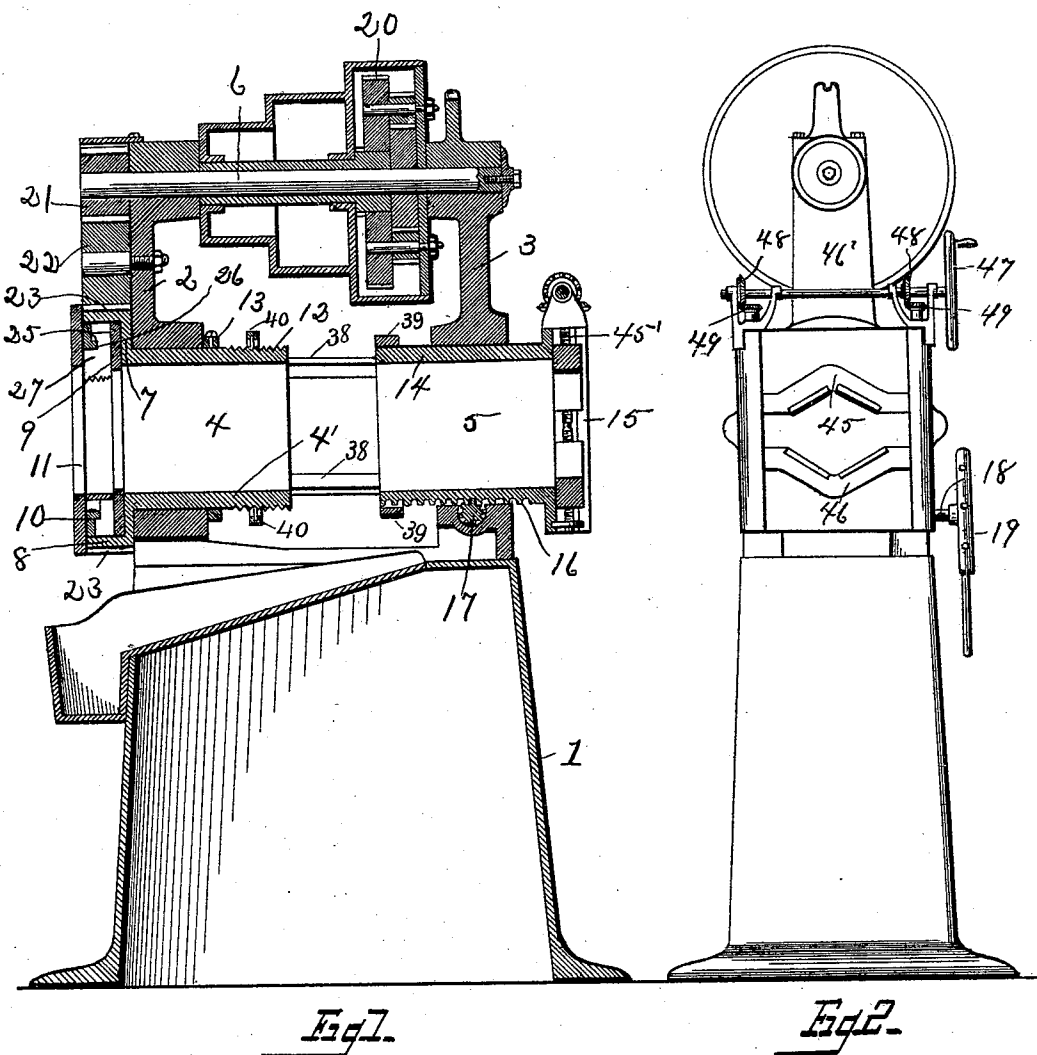
(No Model.)

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PIPE THREADING AND CUTTING MACHINE.

No. 581,186.

Patented Apr. 20, 1897.



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INVENTOR

Willet L. Wells
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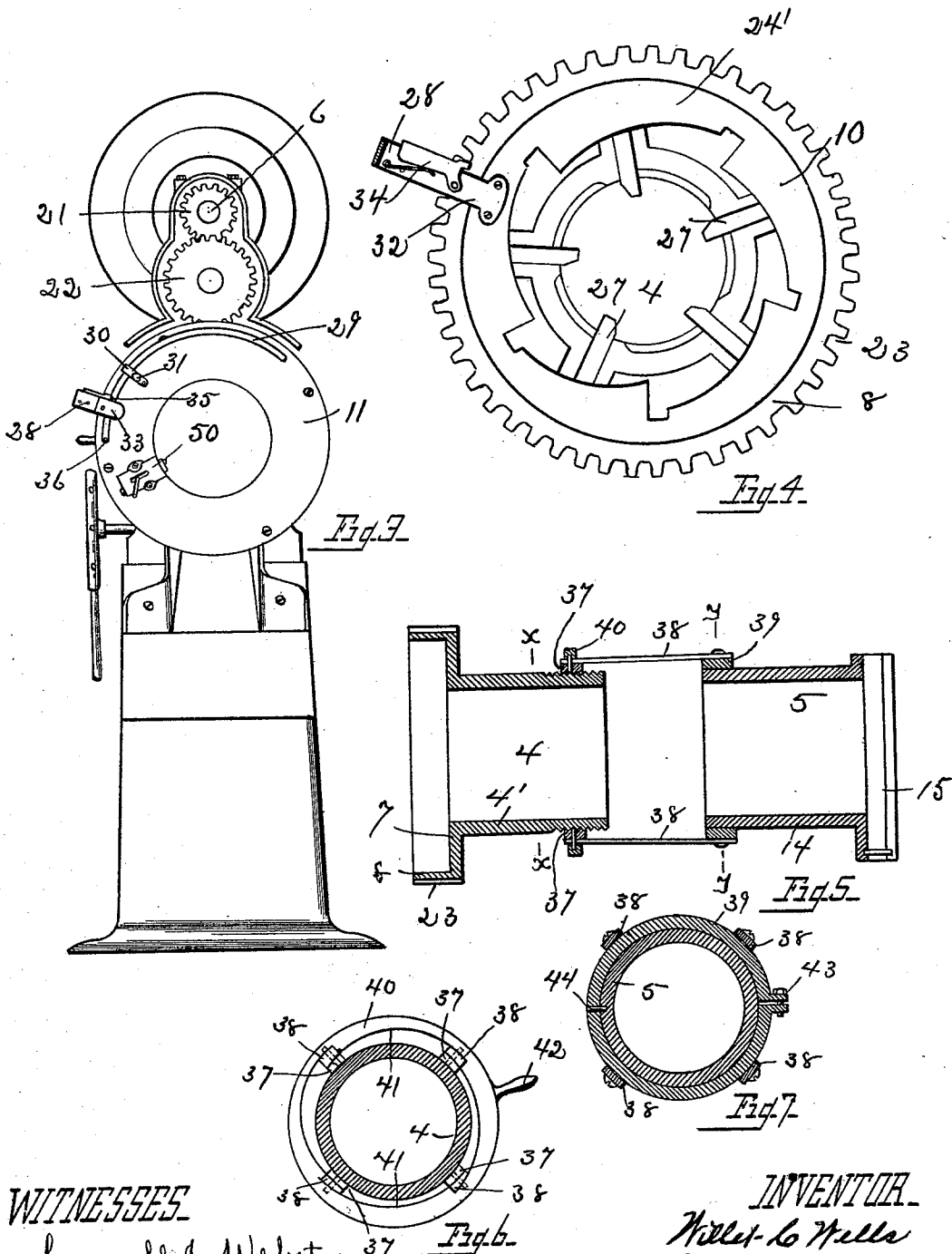
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UNITED STATES PATENT OFFICE.

WILLET C. WELLS, OF TOLEDO, OHIO.

PIPE THREADING AND CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 581,186, dated April 20, 1897.

Application filed July 17, 1893. Serial No. 480,717. (No model.)

To all whom it may concern:

Be it known that I, WILLET C. WELLS, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in a Pipe Threading and Cutting Machine; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form part of this specification.

My invention relates to a pipe threading and cutting machine, and has for its object to construct an apparatus for cutting screw-threads upon pipe and for cutting off the same that shall be simple and cheap of construction, efficient in operation, and adaptable to a wide range of work without necessitating the removal and substitution of different parts.

The invention consists in the parts and combination of parts hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a longitudinal vertical sectional elevation of a complete machine. Fig. 2 is a rear end view in elevation. Fig. 3 is a front end view in elevation. Fig. 4 is a top plan view of the die-head, showing the cam movement for advancing and retracting the chasers and the spring-dog for holding the cam-ring in adjustment, this view being drawn on an enlarged scale. Fig. 5 is a longitudinal sectional view of the lead-screw and friction-drum, with the friction-ring and lead-nuts connected by means of the spring-arms. Fig. 6 is a transverse section on lines X X, Fig. 5. Fig. 7 is a like view on lines Y Y.

1 designates the base, constructed of a strength and weight to support the operative parts without vibration, to which the front portion 2 and rear portion 3 of the frame are firmly bolted and in which the lead-screw 4 and friction-drum 5 and the power-shaft 6 are journaled. Lead-screw 4 is formed with a tubular portion 4', which journals snugly in part 2 of the frame, a shoulder 7 of an enlarged annular portion 8 bearing closely against the front side of the frame, into which plate 9 and cam-ring 10 are secured by means

of a cap-plate 11, the opposite end of the lead-screw projecting through the frame and formed with a screw-threaded portion 12, extending considerably through the inner side of frame 2, forming a lead-screw and held from longitudinal movement in the casing by means of a collar 13.

Friction-drum 5 is formed with an annular portion 14, journaled in frame 3, and a casing 15 for a vise, the lower outer periphery of the drum being formed with a rack 16, into which a pinion 17, journaled transversely of the frame, meshes to advance or retract the drum by the revolution of the pinion-shaft 18 by means of a wheel 19, secured thereon.

20 designates a speed-gearing upon power-shaft 6, and 21 a pinion upon the outer end of the shaft which meshes with an idler 22, journaled upon the frame, and which meshes with the toothed periphery 23 of the annular portion 8 of the lead-screw, whereby the same is revolved.

Cam-ring 10 is formed with a plurality of cam or eccentric flanges 25, which enter the recesses 26 of the chasers 27, whereby they may be simultaneously advanced to the pipe with a uniformity of cut in threading or retracted to allow of the removal of the pipe.

Cam-ring 24 is turned by means of a lever 28, secured thereto and which projects through an opening in the face-plate within convenient reach of the operator.

In order to secure the cam and consequently the chasers in any desired adjustment, there is secured upon the face-plate a semicircularly-curved bar 29, which extends in the same circle as the periphery of the plate approximately one-third of the circumference of the plate and is held in position by means of a clamp 30, secured to the plate and to frictionally bear upon the bar by means of a bolt 31, which allows of adjustment of the bar to regulate the throw of the chasers in adapting them to pipes of different sizes.

Lever 28 is formed of a bar bent upon itself with one end 32, secured upon the cam-ring, projecting through an opening in the face-plate and the end 33 of the parallel portion overlapping bar 29 and has secured thereon a spring-dog 34, which when the chasers are projected to operate upon the pipe seats

within a recess 35 in bar 29 and when the chasers are to be withdrawn to allow of insertion or removal of the pipe is withdrawn from recess 35 to allow lever 28 to be moved until it contacts with a pin 36 upon the end of bar 29 to limit the movement of the lever.

I will now describe the mechanism by which the lead-screw is brought into engagement with the lead-nut to cause the same to travel coincidentally with the pitch of the thread of the chasers and the connections thereof with the friction-drum, whereby there is a compensatory movement between the travel of the pipe and the pitch of thread of the chasers.

The lead-nut comprises a plurality of sections 37, four being shown in the present instance, each section secured to a bar 38, which is secured at the opposite end to a friction-ring 39, clamped upon the drum 5, the tendency of the bars 38 being to spring outwardly and remove the lead-nut from engagement with the lead-screw. The sections of lead-nut 37 are forced into engagement with the lead-screw by means of a multiple-cam ring 40, having as many cam-faces 41 upon its inner periphery as there are sections of lead-nut and causing a uniform contraction of the sections radially as the ring 40 is revolved by means of a handle 42 to cause the minor axis of the cam-faces to ride upon bars 38 and an expansion of the diameter of the sections as the ring is oppositely revolved to allow bars to move into the major axis of the cam-faces, whereby the drum 5 may be returned to a position to receive a new section of pipe.

In order that there may be an adaptability to chasers of different threads with the employment of the same lead-screw, ring 39 is clamped upon drum 5 by means of the transverse bolt 43, whereby the frictional resistance of the drum may be regulated to a minimum, so that if the thread of the chasers is finer or of less pitch than the thread of the lead-screw the drum may move longitudinally in the friction-ring sufficiently to permit the pipe to feed properly to the chasers, the ring being held from rotary movement by means of a pin 44, passed through the same and into a longitudinal groove in the periphery of the drum.

In order that the device may be self-centering in action and convenient in operation, there are two movable jaws, an upper jaw 45 and a lower jaw 46, having opposed inclinations to a common center and are formed with screw-threaded holes in each end, those of the upper jaw having a right-hand thread and those of the lower a left-hand thread.

Journalled in casing 15 upon each side thereof is a shaft 45', having an upper right and lower left hand thread which screws into the upper and lower jaws, respectively, whereby the revolution of the shafts will cause the jaws to approach or separate.

Shafts 45' are revolved in unison by means

of a horizontal shaft 46', turned by means of a crank-wheel 47 and having miter-gears 48, which engage with like gears 49 upon the shafts 45'.

50 designates a cutting mechanism more particularly described and claimed in an application filed contemporaneously herewith, Serial No. 480,718.

In operation the pipe is inserted between the vise-jaws and wheel 47 is revolved, causing the jaws to firmly grasp the same. Wheel 19 is revolved to cause the pipe to enter the cutter-head, when upon the revolution of shaft 6 the cutter-head and lead-screw are revolved, traveling the pipe to the pitch of thread of the chasers, and, if the pitch of thread of the chasers and lead-screws is different, moving the friction-drum the proper travel to allow the chasers to cut the thread.

When the thread has been cut the proper length upon the pipe, lever 28 is thrown back until it contacts with pin 36, and the chasers are withdrawn, when upon turning crank-wheel 47 in an opposite direction the vise-jaws are separated and the pipe withdrawn, when the cam-ring 40 is revolved to allow bars 38 to separate the sections of lead-nut, when the drum 5 is run back to its original position to receive another section of pipe.

It will be seen that I provide for an adjustment of the chasers to different diameters of pipes and that by means of friction-ring 39 and its connection with the cutter-head there is allowed a movement to permit the chasers of different threads in the one machine, thereby embodying in one machine the possibilities of work heretofore requiring several machines.

What I claim is—

1. In a pipe-threading machine, the combination of a die-head, a vise, a lead-screw and self-adjusting frictional connections between the lead-screw and the vise, substantially as described.

2. In a pipe-threading machine, the combination of a revolving die-head, a longitudinally-movable vise, a lead-screw, and frictional connections between the lead-screw and the vise, substantially as described.

3. In a pipe-threading machine, the combination of a die-head, a lead-screw integral therewith, means for revolving the die-head, a separable lead-nut upon the lead-screw, a cam-ring for actuating the nut-sections, and a longitudinal movable vise having a friction-ring thereon which is connected with the nut-sections.

4. In a pipe-threading machine, the combination of a frame, a revolving die-head and a longitudinal movable vise secured therein, arms connecting the die-head and vise carrying upon one end nuts for engagement with a lead-screw upon the die-head, and a multi-cam ring for engaging and disengaging said nuts with the lead-screw, and a collar upon the opposite end of said arms frictionally en-

gaging the vise-section and means for preventing the collar from turning.

5 In a pipe-threading machine, the combination of a revolving die-head having a lead-screw thereon, a longitudinal movable vise, nut-sections adapted to engage the lead-screw and means for actuating the same, a divided collar upon the vise-section having a pin which slides in a groove in the vise-section, right-angled ends to the collar having a bolt
10 passed therethrough to regulate the engagement of the collar upon the vise-section and arms connecting the collar and nut-sections.

15 6. In a pipe-threading machine, the combination of a cutter-head, a lead screw and nut, and means for feeding the pipe to the cutter-head with a frictional resistance to compensate for difference of pitch of thread between the lead-screw and chasers.

20 7. In a pipe-threading machine, the combination of a cutter-head, a lead-screw integral therewith, a vise mechanism, a drum integral with the vise-casing, a ring frictionally secured upon the drum, a plurality of bars se-

cured upon the ring, each having a section 25 of lead-nut secured upon the opposite end, and a cam-ring embracing the sections to force the same into engagement with the lead-screw.

8. In a pipe-threading machine, the combination of a die-head and a multicam ring rotatably seated therein, a cap-plate attached
30 to the die-head and confining said cam-ring to its seat, a lever attached to the cam-ring and overlapping the cam-plate, a bar adjustably secured to the cap-plate and recessed
35 for the reception of a latch, a catch carried by said lever and adapted to engage said recess to limit the movement of the lever in one direction, and a stop to limit the movement of the lever in the other direction, substantially as described. 40

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

WILLET C. WELLS.

Witnesses:

WILLIAM WEBSTER,
F. R. WEBSTER.